

What is claimed is:

1. A flexible sensor board assembly, comprising:
a plurality of magnetically sensitive sensor elements;
5 a plurality of resistor elements;
a flexible circuit board on which said sensor elements and said resistor elements
are mounted and interconnected; and
a seal covering said flexible circuit board, sensor elements, and resistor elements,
wherein said sensor elements and said resistor elements are located on said
10 flexible circuit board to enable bending of said flexible circuit board, said bending
having a radius that is a function of the material properties of said flexible circuit
board, and the separation distance between adjacent sensor and resistor elements.
2. The flexible sensor board assembly of claim 1, wherein a fitting is coupled to said
15 flexible sensor board assembly for attachment to a sending unit stem.
3. The flexible sensor board assembly of claim 1, wherein one or more wires are
coupled to said flexible circuit board to facilitate electrical connection to the assembly.
- 20 4. The flexible sensor board assembly of claim 1, wherein said sensor elements
comprise at least one of a reed switch and a hall effect switch.
5. The flexible sensor board assembly of claim 1, wherein said seal is formed of heat
sensitive dielectric material.
- 25 6. The flexible sensor board assembly of claim 1, wherein said resistor elements are
selected to calibrate for the geometric variations of a liquid container.
7. A liquid level sending unit, comprising:
30 a liquid impervious elongate stem having proximal and distal ends, said elongate
stem forming an aperture at said proximal end and sealed at said distal end;

a flange coupled to said proximal end of said elongate stem;
a stop ring coupled to said distal end of said elongate stem;
a float slideably coupled to said elongate stem for sliding up and down and
rotating about said stem between said flange and said stop ring, said float having one or
5 more embedded magnets for magnetic communication with a flexible sensor board
assembly, said assembly comprising:

a plurality of magnetically sensitive sensor elements;

a plurality of resistor elements;

10 a flexible circuit board on which said sensor elements and said resistor elements
are mounted and interconnected;

a seal covering said flexible circuit board, sensor elements, and resistor elements;

and

a fitting for removably attaching to said elongate stem,

15 wherein said sensor elements and said resistor elements are located on said
flexible circuit board to enable bending of said flexible circuit board, said bending
having a radius that is a function of the material properties of said flexible circuit
board, and the separation distance between adjacent sensor and resistor elements.

8. The liquid level sending unit of claim 7, wherein one or more wires are coupled to
20 said flexible circuit board to facilitate electrical connection to the assembly.

9. The liquid level sending unit of claim 7, wherein said sensor elements comprise at
least one of a reed switch and hall effect sensor.

25 10. The liquid level sending unit of claim 7, wherein said resistor elements are
selected to calibrate for the geometric variations a liquid container.

11. A method of installing a flexible sensor board assembly, the method comprising:
inserting a portion of said flexible sensor board assembly into a sending unit stem;
30 bending said flexible sensor board assembly at least one time during installation;
inserting a remainder of said flexible sensor board assembly; and

closing said flexible sensor board assembly onto said sending unit stem.

12. The method of installing a flexible sensor board assembly of claim 11, wherein said bending is at a radius of less than 5 feet.

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13. The method of installing a flexible sensor board assembly of claim 11, wherein said bending is at a radius of less than 2 feet.

14. The method of installing a flexible sensor board assembly of claim 11, wherein
10 said flexible sensor board assembly has a seal, and further wherein said seal is formed by dipping the flexible sensor board assembly into a liquid rubber type compound and then set aside to harden, contributing thereby to the overall robustness and durability of the flexible sensor board assembly.

15 15. The method of installing a flexible sensor board assembly of claim 11, wherein the flexible sensor board assembly is bent to fit within a narrow space between a fuel storage tank and a deck, thereby saving considerable effort and expense because the tank need not be removed or the deck need not be violated to complete the installation.

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